CLAIMS

What is claimed is:

1. A method for direct-conversion of a modulated radio-frequency (RF) signal, comprising:

receiving an RF signal; and

mixing the RF signal with a plurality of oscillator signals with different phases in an interleaving manner.

2. The method as recited in claim 1, wherein the RF signal is converted to a differential RF signal.

3. The method as recited in claim 1, wherein the oscillator signals include an oscillator signal frequency substantially equal to an RF signal frequency of the RF signal.

4. The method as recited in claim 1, wherein the RF signal is modulated over a finite bandwidth.

5. The method as recited in claim 1, wherein the oscillator signals have phase differences of 45, 135, 225 and 315 degrees.

6. The method as recited in claim 1, wherein the mixing is carried out by a plurality of mixers.

7. The method as recited in claim 6, wherein the oscillator signals are input to the mixers in the interleaving manner.

8. The method as recited in claim 7, wherein the oscillator signals are input to the mixers in the interleaving manner by switching which oscillator signals are input to which mixers.

9. The method as recited in claim 8, wherein the switching occurs at a rate that is faster than a bandwidth of the RF signal.

10. The method as recited in claim 8, wherein the switching occurs in a substantially random manner.

11. The method as recited in claim 10, wherein the switching occurs in a random manner.

12. The method as recited in claim 1, wherein a modulation of the RF signal is reconstructed as a baseband signal using a de-interleaving operation.

13. The method as recited in claim 12, wherein an in-phase baseband signal and a quadrature baseband signal is generated by the reconstruction.

14. The method as recited in claim 12, wherein the de-interleaving operation includes inverting and routing operations.

15. The method as recited in claim 13, wherein low-pass filtering is applied to the in-phase baseband signal and the quadrature baseband signal.

16. The method as recited in claim 15, wherein a direct current (DC) offset of the in-phase baseband signal and the quadrature baseband signal is removed.

17 The method as recited in claim 15, wherein an amplitude distortion and a phase distortion of the in-phase baseband signal and the quadrature baseband signal are equated.

18. A direct-conversion subsystem, comprising:

means for receiving an RF signal; and

means for mixing the RF signal with a plurality of oscillator signals with different phases in an interleaving manner.

19. A direct-conversion subsystem, comprising:

at least one mixer for mixing an RF signal with a plurality of oscillator signals with different phases in an interleaving manner.

20. A system, comprising:

a device in communication with a wireless communication network;

wherein the device includes an integrated circuit including:

at least one mixer for mixing an RF signal with a plurality of oscillator signals with different phases in an interleaving manner.

21. A method for direct-conversion of a modulated signal, comprising:

receiving a signal; and

mixing the signal with a plurality of oscillator signals with different phases in an interleaving manner.